JC17 Rec'd PCT/PTO 0 1 JUN 2001

FORM PTO-1390 (REV 10-2000) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

# TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

| ATTORNEY'S DOCKET NUMBER | |
|---|---|
| 01304/LH | |
| U.S. APPLICATION NO. (If known, see 37 CFR 1.5) | |
| 09/857383 | |

| INTERNATIONAL APPLICATION NO. | INTERNATIONAL FILING DATE | PRIORITY DATE CLAIMED |
|---|---|---|
| PCT/EP99/08157 | 25 October 1999 | 2 December 1998 |

TITLE OF INVENTION "SYSTEM FOR SECURE TRANSACTIONS"

APPLICANT(S) FOR DO/EO/US
Hendrikus KERKDIJK

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [XX] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. [ ] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. [XX] This is an express request to promptly begin national examination procedures (35 U.S.C. 371(f)).
4. [ ] The US has been elected by the expiration of 19 months from the priority date (PCT Article 31).
5. [XX] A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. [XX] is attached hereto (required only if not communicated by the International Bureau).
   b. [ ] has been communicated by the International Bureau.
   c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US).
6. [ ] An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
7. [ ] Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. [ ] are attached hereto (required only if not communicated by the International Bureau).
   b. [ ] have been communicated by the International Bureau.
   c. [ ] have not been made; however, the time limit for making such amendments has NOT expired.
   d. [ ] have not been made and will not be made.
8. [ ] An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. [XX] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. [ ] An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

**Items 11 to 16 below concern document(s) or information included:**

11. [XX] An Information Disclosure Statement under 37 CFR 1.97 and 1.98. ; PTO-1449; 6 references.
12. [XX] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. [XX] A FIRST preliminary amendment.
    [ ] A SECOND or SUBSEQUENT preliminary amendment.
14. [ ] A substitute specification.
15. [ ] A change of power of attorney and/or address letter.
16. [X] Other items or information:

Int. Search Report; 2 sheets formal drawings (Figs. 1-2); Forms PCT/IPEA/416; PCT/RO/105; PCT/IPEA/402; Change of Corres. Address; Request for Publication of Assignment Information.

Express Mail Mailing Label No.: EL 759 976 466 US

Date of Deposit: June 1, 2001

I hereby certify that this paper is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231

Barbara Villani

Barbara Villani

| U.S. APPLICATION NO (if known, see 37 CFR 1.5) | INTERNATIONAL APPLICATION NO. | ATTORNEY'S DOCKET NUMBER |
|---|---|---|
| 09/857383 | PCT/EP99/08157 | 01304/LH |

| | CALCULATIONS PTO USE ONLY | |
|---|---|---|
| 17. ☒ The following fees are submitted: | | |
| **BASIC NATIONAL FEE ( 37 CFR 1.492 (a) (1) - (5) ) :** | | |
| Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO ..... **$1000.00** | | |
| International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO ..... **$860.00** | | |
| International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... **$710.00** | | |
| International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... **$690.00** | | |
| International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) ..... **$100.00** | | |
| **ENTER APPROPRIATE BASIC FEE AMOUNT =** | $ 860.00 | |
| Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(e)). | $ | |

| CLAIMS | NUMBER FILED | NUMBER EXTRA | RATE | | |
|---|---|---|---|---|---|
| Total claims | 8 - 20 = | 0 | X $18.00 | $ | |
| Independent claims | 2 - 3 = | 0 | X $80.00 | $ | |
| MULTIPLE DEPENDENT CLAIM(S) (if applicable) | | | + $270.00 | $ | |
| **TOTAL OF ABOVE CALCULATIONS =** | | | | $ 860.00 | |
| ☐ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2. | | | | $ | |
| **SUBTOTAL =** | | | | $ 860.00 | |
| Processing fee of **$130.00** for furnishing the English translation later than ☐20 ☐30 months from the earliest claimed priority date (37 CFR 1.492(f)). + | | | | $ | |
| **TOTAL NATIONAL FEE =** | | | | $ 860.00 | |
| Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00** per property + | | | | $ 40.00 | |
| **TOTAL FEES ENCLOSED =** | | | | $ 900.00 | |
| | | | | **Amount to be refunded:** | $ |
| | | | | **charged:** | $ |

a. ☒ A check in the amount of $ 900.00 to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of $_____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 06-1378. A duplicate copy of this sheet is enclosed.

**NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.**

SEND ALL CORRESPONDENCE TO:

FRISHAUF, HOLTZ, GOODMAN, LANGER & CHICK
767 Third Avenue - 25th floor
New York, N.Y. 10017-2023

Dated: June 1, 2001

LH: bv

SIGNATURE:

Leonard Holtz

NAME

22,974

REGISTRATION NUMBER

Attorney Docket No. 01304/LH

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s): H. KERKDIJK

Serial No. : Based on PCT/EP99/08157

Filed : Herewith

For : SYSTEM FOR SECURE TRANSACTIONS

Art Unit :
Examiner :

Express Mail Mailing Label
No.: EL 759 976 466 US
Date of Deposit: June 1, 2001

I hereby certify that this paper is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Asst. Commissioner for Patents, Washington, D.C. 20231

Barbara Villani

Barbara Villani

In the event that this Paper is late filed, and the necessary petition for extension of time is not filed concurrently herewith, please consider this as a Petition for the requisite extension of time, and to the extent not tendered by check attached hereto, authorization to charge the extension fee, or any other fee required in connection with this Paper, to Account No. 06-1378.

**PRELIMINARY AMENDMENT**

Hon. Commissioner of Patents
and Trademarks

S I R :

**IN THE SPECIFICATION:**

**Page 1:** Please insert the following as the first sentence:

--This application is a U.S. National Phase Application under 35 USC 371 of International Application PCT/EP99/08157 (published in English) filed October 25, 1999.--

Respectfully submitted,

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Reg. No. 22,974

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09/857383
PCT/EP99/08157
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System for secure transactions

BACKGROUND OF THE INVENTION

The invention relates to a system for the execution of secure transactions in a multimedia network.

Multimedia networks like the Internet offer a wide variety of new possibilities, which will have a great impact on the business environment of the future. Various vendors will start to exploit the Internet as a marketplace. For a customer not to get lost within the vast amount of information that is provided, in the near future agent-based services shall be implemented. Agents are autonomous pieces of software, which may perform tasks for users on the Internet. Based on the user's preferences, they may assist the user in making a selection within the vast range of offered poducts. Complementary to this, the agent may assist in the actual purchase of such a product. As part of this process, the agent will have to be able to perform payments.

One of the biggest inhibitors on Electronic Commerce today is security. Consumers demand that their private information be kept private. When using agent technology within an E-Commerce service, adequate security precautions must be taken. At present, however, agent security is still in its infancy. Therefore, delegating payments to agents is not possible at this moment in time.

SUMMARY OF THE INVENTION

According to the present invention, an architecture is proposed in which agents may perform secure credit card payments. According to the invention, for the execution of such payments the SET (Secure Electronic Transactions) protocol is used, an upcoming standard for secure payments on the Internet by means of credit cards. All new entities and components that are necessary to provide agent-based SET payments will be defined and payment interaction (agent-agent, agent-user and other) will be elaborated upon.

Most entities of the standard infrastructure for performing SET-based payments by means of credit cards are straightforward analogies to real world credit card payments. A few, however, need further explanation. A brief description of these will be given first.

One of the main issues when providing secure payments is authentication of the involved entities. SET uses a robust set of digital certificates for this purpose. Each participant in a SET transaction requires a specific certificate or set of certificates that not only uniquely identifies this participant, but also attests to his or her privilege as holder of a payment card or as a holder of a Merchant account. Brand Associations (e.g. VISA/ MasterCard) or Card Issuers commission so called Certificate Authorities (CAs) to carry out the work of managing SET digital certificates.

Complementary to this, SET introduces the notion of a Payment Gateway, which is needed to validate SET digital certificates and preprocess authorisation, capture and settlement work concerning the payment at hand. Another fundamental requirement for performing SET payments is a component called an Electronic Wallet (E-Wallet). These wallets embody the SET protocol on the customer side and provide a means to store and manage the certificates to digitally sign messages, along with the security aspects consumers demand to keep private data private.

According to the present invention the task of performing SET credit card transactions is delegated to agents. In developing an infrastructure that enables this, the following constraints have been defined:

- Obtaining certificates is not a task that users will want to delegate to their agents. Furthermore, it is not very probable that banks and CAs will approve of this situation. Therefore, we assume all certificates and the E-Wallet to be in place.

- The standard SET infrastructure shall be kept intact.

Thereby the inherent security of SET payments shall remain present and the necessary alterations when implementing shall be limited.

Based on these constraints, an infrastructure has been designed wich will be discussed below.

EMBODIMENT OF THE INVENTION

Figure 1 shows an architecture in which the invention -the use the SET protocol by "secure agents- can be implemented. Figure 1 shows a multimedia network -the internet- 1. Connected to the internet 1 are customer PCs 2, and merchant servers 3, each via an internet service providers (ISP) 4. Also connected to the internet, via an ISP 4, is a payment (gateway) server 5. The payment server 5 is also - via an access server 6- connected to a "Banker's Interchange Network" (BIN) 7, having banking servers 8 connected to it.

A main issue in secure payments is authentication of entities. The SET protocol, to be used in the system shown in figure 1, uses a set of digital certificates for this purpose. Each participant in transaction requires a certificate that uniquely identifies the participant and also attests to his privilege as a holder of a account at the merchant server. Associations like VISA/MasterCard or other Card Issuers commission so called Certificate Authorities to carry out the work of managing SET digital certificates. In figure 1 a Trusted Third Party Server (TTPS) 9 of such Certificate Authority is connected to the internet 1 and can be approached by customers 2, merchants 3 and payment servers 5. Payment servers 5 are needed to validate the digital certificates and to preprocess authorisation, capture and settlement work concerning the payment.

Another fundamental requirement for performing SET payments is a system component called "Electronic Wallet" (EW) 10.

An E-wallet 10 embodies the SET protocol at the customer's side and provides means --within the customer's PC 2-- to store and manage the needed certificates, to digitally sign messages, along with the security aspects customers demand to keep private data private.

According to the invention agents are used to perform secure transactions. As said before, agents are autonomous pieces of software, which are enabled to perform tasks for users (customers or merchants). Based on preferences set by users 2 (customer) and 3 (merchant), the users' respective agents assists or represent the users in presenting and selecting of the merchants' products and, complementary to this, the users' respective agents assist or represents the users to purchase (collect) the selected products and to perform the secure payment for it.

Each customer 2 may be represented by a customer agent (CA), while each merchant 3 may be represented by a merchant agent (MA). The negotiation process (presentation, selection and collection of products and the payments for the collected products) is executed within an "agent platform", preferably embodied within an "Agent Negotiation Server" (ANS) 11. Communication between the customer's PC 3 and the customer's agent at the ANS's side is performed, at the customer's side via the E-wallet 10 --meant for SET based transaction-- which is extended with a special SET Agent Interface (SAI) 12.

The CA 13 communicates with the customer by means of the customer's "browser" (customer inferface) and, via the SAI 12, with the customer's E-Wallet 10 in order to initialise payments. As was the case according to the state-of-the-art (using credit cards), the actual SET payment process is performed between the E-Wallet 10 and the Merchant server 3. Therefore, during actual payment interaction the level of trust is the same as in known, credit card based SET payments.

The CA 13 will have to be authorised to initialise the EW 10 for payments. In standard SET transactions the customer is prompted --via the customer's browser-- to enter the E-Wallet password for this purpose. The CA 13 and the SAI 12 will have to be implemented such, that one of two scenarios may be performed: either the CA 13 has authorisation to release the cryptographic content of the E-Wallet 10 itself, or, after agent initialisation, the customer is prompted to provide an E-Wallet password. In the latter case, customer interaction is necessary. This is not desirable from a usability point of view, but might be preferred by customers (or merchants), since this will give them a sense of control over the payment.

Figure 2 shows a communication procedure for the system presented in figure 1.

For authentication and authorisation purposes, the CA 13 will carry a token, in which an authorisation code for opening up the E-Wallet is encapsulated. The level at which this token is secured within the agent depends on the location of the platform in which the CA 13 performs its tasks. If this platform resides on the customer PC, security requirements on both storing the token within the agent and communicating it to the E-Wallet are less strong than if the agent resides on a remote platform like the ANS 11 as suggested in figure 1. In the latter case, the token will need to be adequately secured, as will. communication between the agent and the E-Wallet. The security requirements are as follows:

The token is stored within the CA 13 in encrypted form, using a random key. A symmetric encryption scheme, such as DES, shall be applied here. This random key is generated at the PC 2 for each specific purchase. A new key shall be generated for each item that is to be bought by the agent.

For communication purposes, both the customer 2 and the CA 13 need to own a specific certificate, other than the

SET certificate. Payment start messages shall be communicated to the E-Wallet 10 in encrypted form, using a random session key. A symmetric encryption scheme, such as DES, shall be applied here. In turn, this random key shall be sent over in encrypted form, using the customer's public key related to the communication certificate. The message shall be signed with the agent's private key and a time stamp shall be added to the message in order to prevent replay by malicious parties.

In figure 2 the following communication steps are performed:

In step I, the CA 13 requests the Merchant Agent (MA) 14 to pay by credit card. The latter then informs the merchant server 3 of the requested payment, while parallell to that the CA 13 initialises the EW 10.

In step II, the standard SET procedure is performed by the EW 10, the Merchant server 3 and the Payment Gateway server 5.

Finally, in step III, after completion of the payment, the Merchant server 3 informs the MA 14 of this fact. The MA 14 passes this message on to the CA 13, which notifies the customer of payment completion.

The infrastructure and message flows are a natural extension of any agent-based infrastructure. Implementation may therefore by performed straightforwardly.

CLAIMS

1. System for the execution of secure transactions in a multimedia network, comprising a multimedia network with customer stations (2), merchant servers (3), and a payment server (5) connected to it, secure electronic transactions being performed using a secure electronic transactions protocol, comprising the exchange of digital certificates, uniquely identifying the relevant transaction participants and also attesting their privileges at the merchant server, said certificates being managed by a Trusted Third Party Server (9) being connected too to said multimedia network, said payment servers 5 being enabled to validate the digital certificates presented and to process authorisation concerning the payment, said customer stations comprising transactions management means (10), fit for performing said secure electronic transactions protocol and for managing said certificates for the customer station, c h a r a c t e r i z e d i n a remote customer agent (13), managed by agent parameters received or to be received from said customer station (2) and thus, under the control of said parameters, assisting or representing the customer station in a negotiation process, including selecting products to be presented by the merchant server (3), and payment for selected products in a secure way, under control of said secure electronic transactions protocol and said certificates, being managed by said transactions management means (10).

2. System according to claim 1, c h a r a c t e r i z e d i n that said customer station (2) comprises an agent interface 12, fit for transmission of codes, parameters and certificates between said customer agent (13) and said transactions management means (10).

3. System according to claim 1, c h a r a c t e r i z e d i n a remote merchant agent (14), managed by agent parameters received or to be

received from said merchant station (3) and thus, under the control of said parameters, assisting or representing the merchant station in a negotiation process, including presenting products to the customer agent (13) or the customer station (3), and to have paid for products being selected by the customer agent (13) or the customer station (3), in a secure way, under control of said secure electronic transactions protocol and said certificates.

4. System according to claim 2, characterized in that said negotiation and payment process by said customer agent (13) and said merchant agent (14) is performed within an agent negotiation server (11), connected to said multimedia network (1).

5. System according to claim 1, characterized in that, within said secure electronic transaction protocol, for authentication and authorisation said customer agent (13) transmits a token is encapsulated, comprising an authorisation code for opening up said transactions management means (10).

6. System according to claim 5, characterized in that said token is stored within the customer agent (13) in an encrypted form, using a random key, being generated at the customer station (2) for each new payment process.

7. System according to claim 5, characterized in that both the customer station (2) and the customer agent (13) comprise a specific communication certificate, payment start messages being communicated to said transactions management means (10) in encrypted form, using a random session key which, in turn, is sent over in encrypted form, using the customer station's public key related to said communication certificate, said message being signed with the customer agent's private key related to said communication

certificate and a time stamp being added to said message in order to prevent replay by malicious parties.

8. Method for the execution of secure transactions in a multimedia network, comprising a multimedia network with customer stations (2), merchant servers (3), and a payment server (5) connected to it, secure electronic transactions being performed using a secure electronic transactions protocol, comprising the exchange of digital certificates, uniquely identifying the relevant transaction participants and also attesting their privileges at the merchant server, said certificates being managed by a Trusted Third Party Server (9) being connected too to said multimedia network, said payment servers 5 being enabled to validate the digital certificates presented and to process authorisation concerning the payment, said customer stations comprising transactions management means (10), fit for performing said secure electronic transactions protocol and for managing said certificates for the customer station, moreover, comprising a remote customer agent (13), managed by agent parameters received or to be received from said customer station (2) and thus, under the control of said parameters, assisting or representing the customer station in a negotiation process, including selecting products to be presented by the merchant server (3), and payment for selected products in a secure way, under control of said secure electronic transactions protocol and said certificates, being managed by said transactions management means (10), while, moreover, said customer station (2) comprises an agent interface (12), fit for transmission of codes, parameters and certificates between said customer agent (13) and said transactions management means (10), and, besides, a remote merchant agent (14), managed by agent parameters received or to be received from said merchant station (3) and thus, under the control of said parameters, assisting or representing the merchant station in a negotiation process, including presenting products to

the customer agent (13) or the customer station (3), and to have paid for products being selected by the customer agent (13) or the customer station (3), in a secure way, under control of said secure electronic transactions protocol and said certificates, c h a r a c t e r i z e d i n the following communication steps:

in a first step, said customer agent (13) requests said merchant agent (14) to pay by credit card, and the merchant agent then informs said merchant server (3) of the requested payment, while parallell to that the the customer agent (13) initialises said transactions management means (10);

in a second step, a standard secure electronic transaction procedure is performed by the transactions management means (10), the merchant server (3) and the payment gateway server (5);

in a third, final step, after completion of the payment process, the merchant server (3) informs the merchant agent (14) of that completion of the payment process, and the merchant agent (14) passes this message on to the customer agent (13), which notifies the customer station (2) of the payment completion.

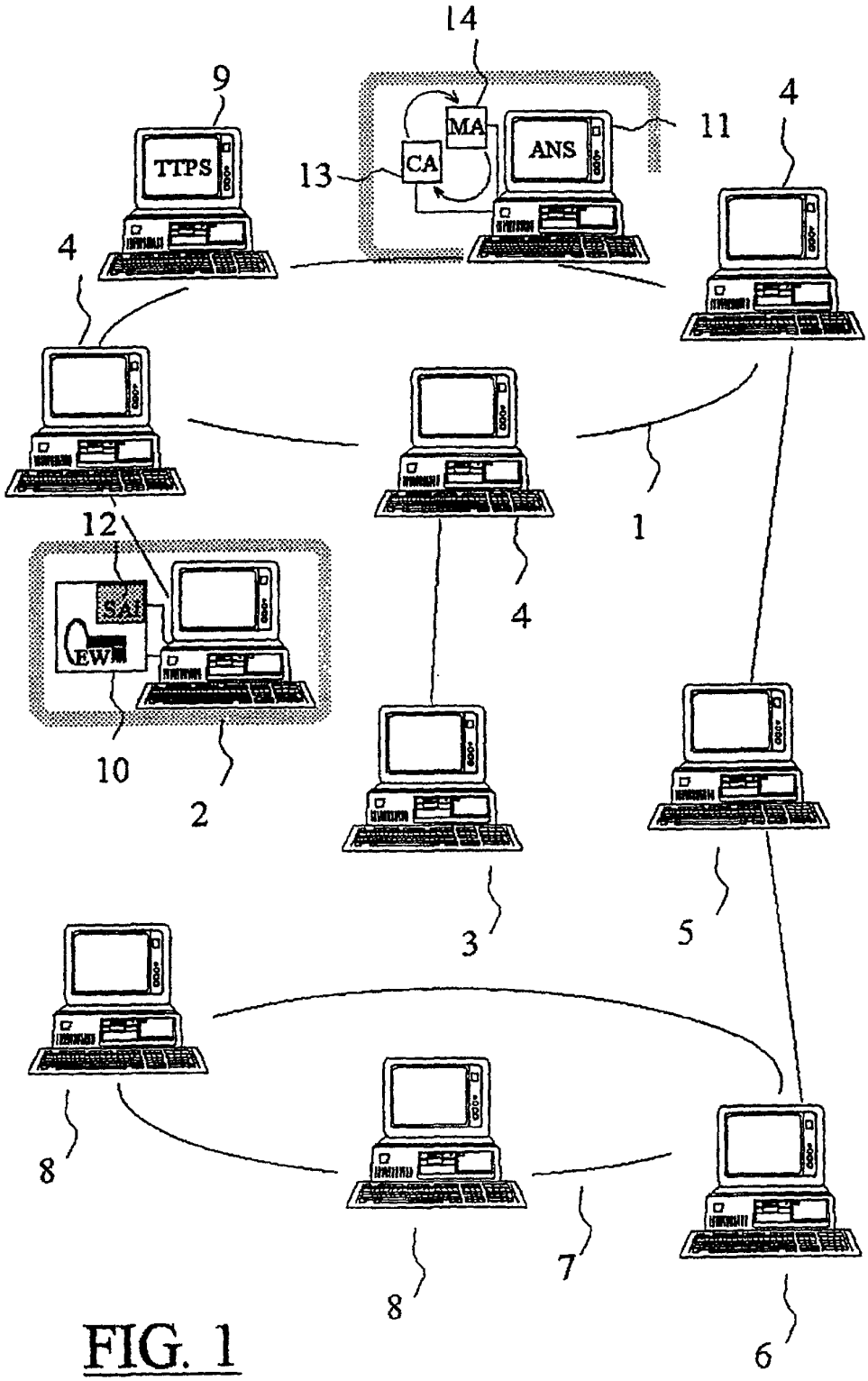


FIG. 1

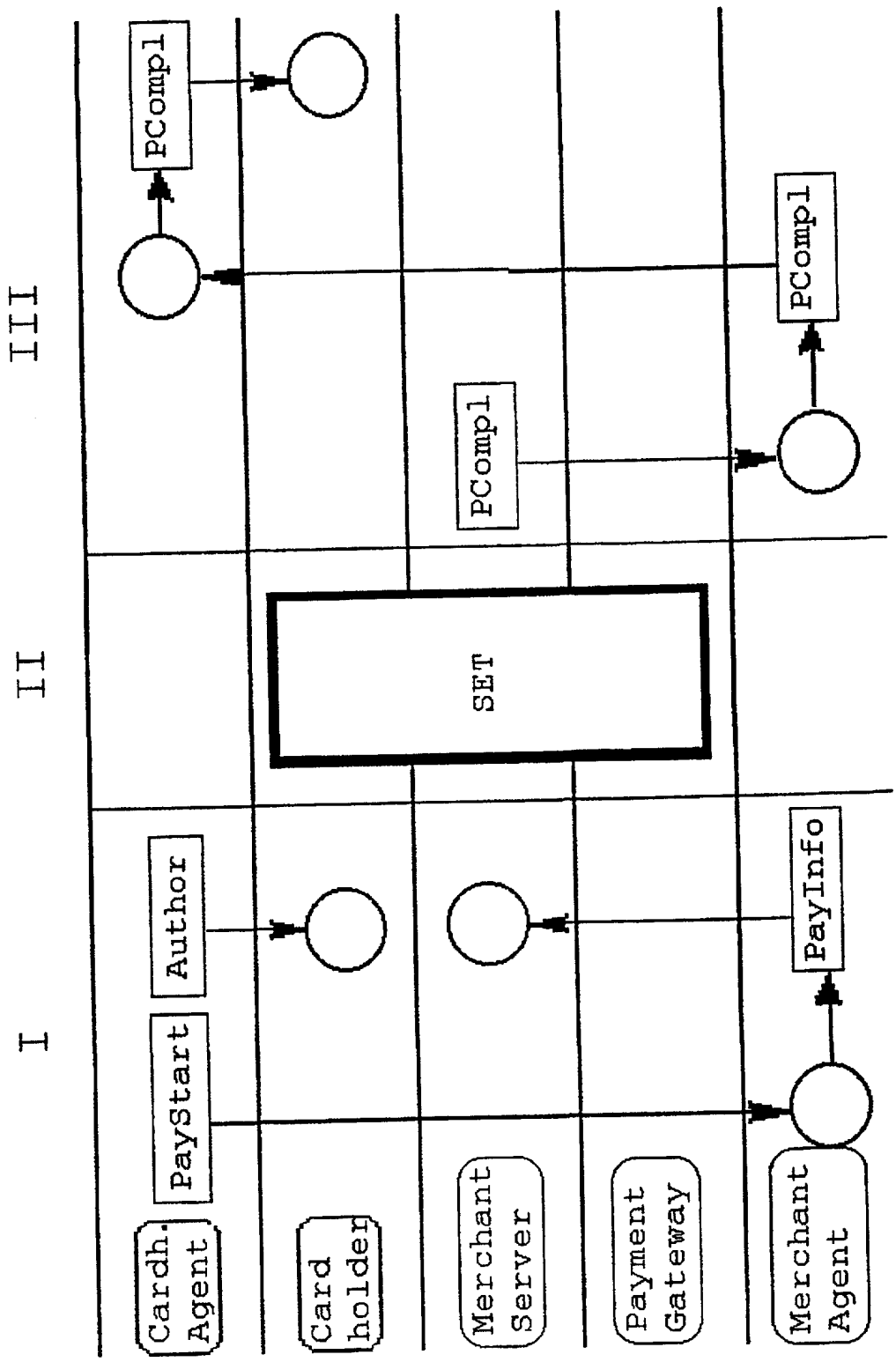
I
II
III
Cardh. Agent
PayStart
Author
Card holder
Merchant Server
SET
Payment Gateway
PayInfo
Merchant Agent
PCompl
PCompl
PCompl

FIG. 2

Please type a plus sign (+) inside this box → [+]

PTO/SB/122 (10-00)
Approved for use through 10/31/2002 OMB 0651-0035
U S Patent and Trademark Office U S DEPARTMENT OF COMMERCE



# CHANGE OF CORRESPONDENCE ADDRESS
## *Application*

Address to:
Assistant Commissioner for Patents
Washington, D.C. 20231

| | |
|---|---|
| Application Number | |
| Filing Date | Herewith |
| First Named Inventor | H. KERKDIJK |
| Group Art Unit | |
| Examiner Name | |
| Attorney Docket Number | 01304/LH |

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I am the :

[ ] Applicant/Inventor.

[ ] Assignee of record of the entire interest.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

[X] Attorney or Agent of record.

[ ] Registered practitioner named in the application transmittal letter in an application without an executed oath or declaration. See 37 CFR 1.33(a)(1). Registration Number _____

| | |
|---|---|
| Typed or Printed Name | Leonard Holtz, Reg. No. 22,974 |
| Signature | |
| Date | June 1, 2001 |

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*

[ ] *Total of _____ forms are submitted.

9/97FHGL&C U.S. Attorney Docket _____

# APPLICATION FOR UNITED STATES LETTERS PATENT

## PCT Declaration and Power of Attorney (35 U.S.C. 371(c)(4))
## PCT Application - United States Designated Office

As a below named inventor, I declare that:

My residence, post office address and citizenship are as stated below next to my name; I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:
"System for secure transactions"

described and claimed in International Application number PCT/EP99/08157 filed on October 25, 1999
and, if it was not amended

I have reviewed and understand the contents of said specification, including claims.
I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR §1.56.

I claim priority benefits under 35 USC §119 of: (i) any foreign application(s) for patent or inventor's certificate listed below; or (ii) any United States provisional application(s) listed below; and have also identified below any foreign application(s) for patent or inventor's certificate, or PCT international application having a filing date before that of the application(s) on which priority is claimed.

| COUNTRY | APPLICATION NUMBER | DATE (day, month, year) | PRIORITY CLAIMED |
|---|---|---|---|
| EP | 98204063.6 | December 2, 1998 | Yes X No |
| | | | Yes No |

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I appoint the following attorneys to prosecute this application and to transact all business in the U.S. Patent & Trademark Office connected therewith: Stephen H. Frishauf, Reg. No. 16,233; Leonard Holtz, Reg. No. 22,974; Herbert Goodman, Reg. No. 17,081; Thomas Langer, Reg. No. 27,264; Marshall J. Chick, Reg. No. 26,853; Richard S. Barth, Reg. No. 28,180; Douglas Holtz, Reg. No. 33,902; and Robert P. Michal, Reg. No. 35,614.

CORRESPONDENCE AND CALLS TO:

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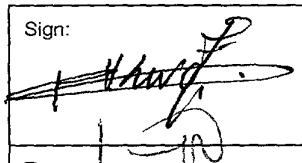
767 Third Avenue - 25th Floor Tel.: (212) 319-4900
New York, New York 10017-2023 Fax.: (212) 319-5101

| INVENTOR: SIGNATURE | DATE | RESIDENCE AND POST OFFICE ADDRESS |
|---|---|---|
| Sign:  | Date: 18/05/2001 | Residence: (City & Country) Oostersingel 23/19 9713 EX GRONINGEN NL The Netherlands Post Office Address: |
| Type: KERKDIJK, Hendrikus | Citizen of: The Netherlands | P.O. Box 95321 2509 CH THE HAGUE The Netherlands |
| Sign: | Date: | Residence: (City & Country) Post Office Address: |
| Type: | Citizen of: | |
| Sign: | Date: | Residence: (City & Country) |